have a right (i) to schools, youth clubs and public places that are smoke free; (ii) to be brought up in a home that is smoke free; and (iii) to be free from the effects of tobacco in the womb. Children are apparently being encouraged to join a "Smokebusters" club and will work to persuade others to stop smoking. *See Gloucester Citizen*, April 30, 1993.

LEGAL ISSUES AND DEVELOPMENTS

United Kingdom

[54] "Tobacco Firms Aim to 'Stifle' Legal Actions," R. Taylor, *Yorkshire Post - Leeds*, April 21, 1993; "MP on 'Disgraceful' Cigarette Companies," R. Taylor, and "Cigarette Ash in the Works," Editorial *Yorkshire Post - Leeds*, April 22, 1993

These press items discuss the significance of the action taken by tobacco companies in the United Kingdom to forestall the granting of legal aid to employees who are seeking to recover damages for workplace exposure to ETS. The tobacco companies have filed documents with the legal aid board, urging it not to grant assistance in these cases. *See* issue 42 of this Report, March 5, 1993.

A spokesperson for ASH is quoted as saying that the measures taken by the tobacco companies "show the desperate lengths they will go to. They're saying they are prepared to interfere in every passive smoking case against an employer and attempt to strangle them at birth." Conservative MP Jerry Hayes is evidently writing to the Lord Chancellor's office to protest the industry action. He argues that the tobacco companies should not "blatantly interfere in the process of justice," and is calling for a thorough investigation. Hayes has also served as a spokesperson for ASH.

Although recognizing that the tobacco companies have a legitimate right to intervene with the legal aid board, the editorial characterizes the action taken by the industry as "naked bullying by the rich and powerful," and questions "how their shareholders feel about being associated with such a crew." The writer evidently believes that the fairest way to deal with the issues is for a test case to proceed in court.

Republic of Ireland

[55] Tobacco Companies Make Legal Aid Submissions

On May 24, 1993, several U.K. cigarette manufacturers made submissions to the Northern Ireland Legal Aid Department stating their opposition to granting such aid. The submissions were made in response to reports that some lawyers were preparing legal aid applications on behalf of employees who claim their employers failed to protect them from the alleged health effects of ETS exposure in the workplace.

OTHER DEVELOPMENTS

Australia

[56] Council Requests Comments on ETS Publication

The National Health and Medical Research Council has published a notice indicating it is establishing a working party to update its 1986 publication, "Effects of Passive Smoking on Health." In the notice, which was published in a newspaper ad, individuals interested in the topic are invited to submit comments by June 22, 1993.

Comments should be directed to: Health Care Committee, National Health and Medical Research Council, GPO Box 9848, Canberra ACT 2601. *See Weekend Australian*, May 22-23, 1993.

[57] Business Makes Smoking Condition of Employment

It has been reported that one Ipswich business is requiring its employees to accept ETS exposure as part of their employment conditions. Evidently, a doctor who was treating a nonsmoking patient for a chest condition learned of the requirement. The patient reportedly worked in an office where 25 of 30 employees were smokers. *See Queensland Times*, May 11, 1993.

[58] Doctor Links Parental Smoking to Development of Childhood Asthma

According to a press report, Dr. David Hill, writing in the Medical Journal of Australia, has purportedly found evidence in worldwide studies for a link between parental smoking and the development of asthma in children. *See Gladstone Observer*, May 12, 1993.

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[59] Smoke-free Restaurants to Be Identified With New Logo

According to a press report, those restaurants that have adopted smoking bans or have set aside nonsmoking areas will be identified by a logo which features the combination of symbols for eating utensils with the international nonsmoking symbol on the plate. *See Daily Telegraph Mirror*, May 19, 1993.

[60] Perfume May Join ETS as Public Health Concern

According to a press report, perfumes may follow ETS as the next alleged public health hazard in Australia. Publicity is being given to a $75,000 damage payment that was made by Bloomingdale's in the U.S. to a woman who claimed she had been hospitalized with an asthmatic attack after being sprayed with perfume. The press is also discussing the San Francisco ban on perfumed products at public meetings and a church that has apparently set aside four odorless pews. *See Sunday Telegraph*, May 23, 1993.

SWITZERLAND

[61] International Union Releases Fact Sheet on ETS

The Geneva-based International Union Against Cancer has released a series of fact sheets on tobacco. Among the "fact sheets" is a document entitled *Policies to protect the rights of non-smokers.* Each "fact sheet" develops a specific theme, provides practical advice to implement a strategy relevant to the theme's goal and concludes with a recommendation. The "fact sheets" were evidently prepared with the support of ASH-UK, the American Cancer Society and the Anti-Cancer Council of Victoria, Australia.

UNITED KINGDOM

[62] FOREST Publishes Article by Economic Analyst

The smokers' rights organization FOREST has recently published an article entitled "No Problem! An Economic Perspective on Smoking" by Dr. Kevin Dowd, an economic analyst. The article, concluding that claims by antismoking activists regarding smoking as an economic burden are specious, contains a brief mention of ETS issues. Dowd cautions that those studying the issue of ETS must distinguish between ETS and the smoke that a smoker inhales before trying to establish whether there are any adverse effects due to ETS exposure. He also states "there is still no convincing evidence in favour of the adverse health effects of passive smoking."

An introduction to the article by Lord Harris of High Cross notes that the trend of general intolerance that has been directed at smokers is part of "the widespread tendency to identify such private behaviour as a public 'problem' for which the 'solution' is to 'summon up Leviathan to stamp it out'." Lord Harris' new slogan is "Anti-smokers can damage your freedom — and their own."

[63] Tobacco "Freedom Fighters" Defy Train Smoking Ban

On May 17, 1993, members of PUFFS (Passengers United for Freedom to Smoke) reportedly took over the rear carriage of a commuter train and lit pipes and cigarettes to protest a smoking ban introduced on Network SouthEast's Great Eastern division. According to Network SouthEast, anyone who continues to defy the ban will face fines of up to 400 pounds. *See The Times*, May 18, 1993.

In a related story, a rail users' watchdog group has reportedly criticized British Rail's decision to ban smoking on most Network SouthEast routes. According to the group, railway managers are ignoring the demands of a "significant minority" of commuters. *See Daily Telegraph*, May 20, 1993.

[64] Leading Bridge Club Bans Smoking

The ACOL Bridge Club in Hampstead has reportedly introduced a smoking ban which has provoked a number of resignations. The club has placed its future in the hands of a world and European bridge champion who, according to press reports, "has a virulent dislike of the weed." The manager of the London School of Bridge who is quoted in the article observed that bridge players tend to smoke a lot, but that students at the school are not allowed to smoke "in the hope that they won't develop the habit of puffing while they play." *See The Daily Telegraph*, May 22, 1993.

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MEDIA COVERAGE

UNITED KINGDOM

[65] "Only a Smoke Screen: Why Cigarettes are Not Really the Villains," C. Turner, *Doncaster Star*, April 20, 1993

This article, written by a representative of the Tobacco Advisory Council, discusses the role of ventilation in controlling indoor air quality problems. The author points out that the majority of "sick" building problems are not caused by tobacco smoke and that banning smoking will not "banish all the other unseen constituents in the indoor air — many of them of considerable concern."

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APPENDIX A

The numbers assigned to the following article summaries correspond with the numbers assigned to the synopses of the articles in the text of this Report.

RESPIRATORY DISEASE AND CONDITIONS — ADULTS

[35] **"Long-Term Ambient Concentrations of Total Suspended Particulates, Ozone, and Sulfur Dioxide and Respiratory Symptoms in a Non-smoking Population," D.E. Abbey, F. Petersen, P.K. Mills, and W.L. Beeson,** ***Archives of Environmental Health*** **48(1): 33-46, 1993**

"Seventh-Day Adventists (SDAs) provide a unique population in which to evaluate health effects of ambient air pollutants. . . . In California, . . . SDAs live in areas that differ greatly with respect to concentrations of ambient air pollutants; therefore, variability in exposure enhances power to detect alteration in risk."

"Ten-year follow-up data are now available on this cohort and are reported herein. In this article, we present associations between long-term cumulative ambient concentrations of total suspended particulates, ozone, and sulfur dioxide and the following adverse health effects: (1) new cases in 1987 of definite symptoms of AOD [airway obstructive disease], chronic bronchitis, and asthma in those who did not have definite symptoms in 1977, and (2) the change in severity of these symptom complexes (1977-1987)."

"This article focuses on TSP and ozone, both of which are high in Southern California. The effects of SO_2 are also addressed."

"[O]ur study had determined statistically significant increased risks of definite symptoms of AOD and chronic bronchitis to be associated with ambient concentrations of TSP above 100 ug/m^3 and increased risks of asthma with ambient concentrations above 150 ug/m^3. This confirms the prudence of the federal standard of 75 ug/m^3 for TSP. Long-term ambient concentrations of ozone in excess of 10 pphm were significantly associated with development of new cases of asthma in men and with increases of severity of asthma in non-sex-specific analyses. These results need to be considered in future decisions regarding standard setting for ozone. A future paper will address the health effects of particulates of less than 10 micron diameter in this cohort in relation to recently established standards for that pollutant."

RESPIRATORY DISEASES AND CONDITIONS — CHILDREN

[36] **"Childhood Asthma and Indoor Environmental Risk Factors," C. Infante-Rivard,** ***American Journal of Epidemiology*** **137(8): 834-844, 1993 [See Appendix A]**

"Indoor environmental factors that have received the most attention in the past are tobacco smoke and directly or indirectly measured nitrogen dioxide, mainly from gas appliances. The present study considered these and other, less frequently studied potential risk factors for their relation to the incidence of asthma among 3- and 4-year-old children. The objective of the study was to estimate the contribution to asthma incidence of chemical, physical, and biologic indoor environmental factors, as well as family history of asthma and past infections, after accounting for personal susceptibility. A case-control study was carried out to meet this objective."

"In a case-control study carried out in Montreal, Quebec, Canada, between 1988 and 1990, indoor environmental factors were studied in relation to the incidence of asthma among 3- and 4-year-old children. Cases, whose parents were recruited at a hospital emergency room, were children who had a first-time diagnosis of asthma made by a pediatrician. Controls were chosen from family allowance files and were matched with case children on age and census tract. A telephone interview was administered to the children's parents. A . . . subsample was chosen to wear a nitrogen dioxide monitoring badge during a 24-hour period. Multiple conditional logistic regression analysis showed that after personal susceptibility factors were controlled for, the following were independent risk factors for asthma: the mother's heavy smoking (odds ratio (OR) = 2.77, 95% confidence interval (CI) 1.35-5.66), use of a humidifier in the child's room (OR = 1.89, 95% CI 1.30 - 2.74), and the presence of an electric heating system in the home (OR = 2.27, 95% CI 1.42-3.65). The presence of other smokers in the home was not quite significant (OR = 1.82, 95% CI

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0.98-3.38). A history of pneumonia, the absence of breast feeding, and a family history of asthma were also significant risk factors. In a separate unmatched multivariate analysis of subjects who had worn the nitrogen dioxide badge, there was a dose-response relation between nitrogen dioxide (in parts per billion) and asthma. These results confirm the role of susceptibility factors in asthma and show that indoor environmental factors contribute to the incidence of asthma."

"In the literature, there appears to be no other incident density case-control study of new cases of asthma diagnosed by pediatricians among 3- and 4-year old children. Previous studies were largely cross-sectional in design and included elementary school-aged children (generally aged 6-14 years) who, according to parental reporting, had asthma or a closely related respiratory problem such as wheezing or whistling, or had had some type of chest illness in the previous year. However, most of the potential risk factors for childhood asthma considered in the present report have been studied before."

"Increased risk in this study may be due to children being younger and belonging to a narrower age group than children in most previous studies and to the physician diagnosis of disease, which is likely to have been much more uniform than that in any other study."

"In conclusion, this incident density case-control study showed that even after accounting for personal susceptibility, family history, past infections, and factors related to the indoor environment contribute significantly to the incidence of asthma. For future studies to have a greater impact on public health, it will be necessary to assess exposure-response relations and to relate findings to suggested protective standards. Obtaining reliable quantitative measurements will be the challenge to future studies."

[37] **"Indoor Nitrogen Dioxide and Childhood Respiratory Illness," L.S. Pilotto and R.M. Douglas, *Australian Journal of Public Health* 16(3): 245-250, 1992**

"Nitrogen dioxide is produced from the combustion of fossil fuels and as an emission from gas-fired appliances, and is also a component of tobacco smoke. Nitrogen dioxide has been shown in experimental animals to be toxic to the respiratory tract. A number of recent studies have suggested that children exposed to significant levels of nitrogen dioxide in the home may be more susceptible to respiratory illness than children exposed to normal ambient levels. Respiratory illness is a major cause of morbidity in children everywhere."

"This report will focus on the epidemiological evidence of association between NO_2 exposure and respiratory symptomatology and infection in children, who are likely to be more susceptible to air pollution than adults. The current Australian experience is reviewed and recommendations for future direction are given."

"[A]ll studies which relied on ambient NO_2 levels as measures of exposure found a positive relationship."

"In the studies using gas for cooking at home as a measure of NO_2. . . exposure, mixed results were found. These studies mainly involved cross-sectional study designs with retrospective parental questionnaires to determine symptom and illness histories."

"Mixed results have also occurred in the few studies that measured indoor NO_2 levels and attempted to estimate personal levels of exposure."

"In studies measuring ambient NO_2 levels only, caution is needed in interpreting a positive association between polluting gases and respiratory illness to NO_2."

"The World Health Organisation recommends maximum levels of 0.08 ppm over 24 hours and 0.21 ppm over one hour for ambient NO_2 exposure. The NHMRC (recent recommendation) accepts that 'NO_2 may cause clinical effects in some individuals above 0.3 ppm hourly average'. The Australian experience would indicate that a significant number of people are exposed to more than 0.16 ppm of NO_2 hourly on average and that a large number may be exposed to more than 0.3 ppm of NO_2, especially in school classrooms."

"Serious doubts exist, for reasons already explained, about the interpretation of the previously reported studies which used ambient monitoring and gas cooking as surrogate measures of personal NO_2 exposure. . . . [O]verall interpretation of these conflicting results [is] difficult and does not provide adequate epidemiological evidence from which to set a maximum hourly or 24-hourly average indoor goal for NO_2."

"Such research is needed to determine if there is a health risk associated with exposure to low-level NO_2. If there is no determined health risk, it would be unfair to impose arbitrary restrictions that may be financially detrimental to many organisations."

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[38] **"The Relationship of RSV-Specific Immunoglobulin E Antibody Responses in Infancy, Recurrent Wheezing, and Pulmonary Function at Age 7-8 Years,"** R.C. Welliver and L. Duffy, *Pediatric Pulmonology* 15: 19-27, 1993

"The principal hypothesis to be tested in the present study was that RSV-IgE responsiveness in infancy might be related to recurrent wheezing through 7-8 years of age. Additionally, risk factors of interest (family history of asthma, passive exposure to cigarette smoke throughout early childhood, and skin test reactivity to common allergens at ages 7-8 years) were evaluated for their relationship to recurrent wheezing and pulmonary function. Finally, bronchodilators were administered at the time of pulmonary function testing to determine if small airway dysfunction following bronchiolitis was at least partially reversible."

"[A]ssociation of RSV-IgE responses with the development of any wheezing following bronchiolitis was observed in this study and it extended this observation to age 7-8 years. All 9 (100%) subjects with current wheezing at age 7-8 years and 16 of 25 (64%) subjects without current wheezing had manifested RSV-IgE responses in infancy. This difference is not statistically significant, but the number of subjects studied provided a statistical power of less than 70% to detect a difference."

"In general, RSV-IgE responses in infancy were unrelated to pulmonary function in later childhood. This may have been expected, since numerous factors influence the development of lung function during childhood. However, among children with wheezing through age 7-8, RSV-IgE responses in infancy were quite strongly correlated with comparatively good pulmonary function. It is difficult to conceive a mechanisms by which RSV-IgE responses in infancy, which have been associated with greater severity of initial illness, could have resulted in improved pulmonary function at age 7-8 years, and then only in currently wheezing children."

"[I]n the present study decreased pulmonary function at age 7-8 years was associated with evidence of atopy as well as with passive exposure to cigarette smoke during childhood. In addition, airway hyperreactivity at age 7-8 years was related to the presence of 2 or more positive skin tests. These findings are not surprising, given the abundant evidence suggesting that both passive exposure to cigarette smoke and childhood asthma adversely affect lung function during childhood and adult life. Nevertheless, they suggest that atopy and passive smoking are important determinants of abnormal lung function which might otherwise be attributed to RSV infection itself. . . . Taken together, all studies suggest that atopy and passive exposure to cigarette smoke may play a greater role in determining the long-term outcome of RSV bronchiolitis than the severity of the initial RSV infection itself."

"Together with the results of other studies, our data suggest that factors unrelated to the severity of the initial RSV infection itself significantly influence the development of recurrent wheezing or pulmonary function abnormalities. If our findings are correct, RSV vaccine strategies should be directed at protecting infants at high risk for severe illness at the time of initial RSV infection."

Other Health Issues

[39] **"Protracted Secretory Otitis Media. The Impact of Familial Factors and Day-Care Center Attendance,"** F. Rasmussen, *International Journal of Pediatric Otorhinolaryngology*, 26: 29-37, 1993

"This study's objective was to assess the impact of familial factors, day-care center attendance, and passive smoking on the incidence of protracted secretory otitis media (SOM). An unselected cohort of 1306 Swedish children were followed from birth to 7 years of age. Information about physician visits and insertions of tympanostomy [sic] tubes for SOM was collected at the ENT-departments in one Swedish county."

"The research questions directing this population based cohort study are: (a) How large is the cumulative incidence of protracted SOM among Swedish preschool children? (b) Does the risk for protracted SOM increase if a sibling has or has had the same health problem? and (c) Are the type of day-care and parents' smoking habits risk factors for protracted SOM?"

"The children were divided into three groups according to their mothers' smoking habits: Mothers who smoked 10 or more cigarettes per day throughout their child's first 4 years of life, mothers who were nonsmokers during the child's first 4 years, and the remaining group. No significant differences were found between any of these groups of children."

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"Analyses which included only the two-parent families were also performed. No difference was present in proportions treated with tympanostomy tubes between the children whose mothers and fathers were non-smokers, those whose mothers and fathers had smoked 10 or more cigarettes per day and children from the remaining two-parent families."

"The risk for protracted SOM increased four times if a sibling had had the same disease. When interpreting this finding it is important to keep in mind that the form of day-care and parents' smoking habits were taken into account in the multivariate analysis."

"[T]he present study clearly shows that familial factors are important in the etiology of protracted SOM. The intra-familial associations can not be explained by similarities among siblings with respect to form of day-care or passive smoking in the home. The pathophysiological mechanisms behind these intra-familial associations remain to be identified by future research."

"Younger siblings of children with protracted SOM comprise a risk group for the same disease. While previous tympanometric studies have shown that enrollment in a DCC [day care center] comprises a risk factor for single short episodes of SOM, the present study has confirmed attendance in DCCs as a risk factor for protracted SOM. Attendance in DCC is thus not suitable for children with protracted SOM. This form of day-care is even less appropriate if an older sibling to the child with protracted SOM has or has had the same disorder."

Indoor Air Quality

[40] **"Measurement of Cabin Air Quality Aboard Commercial Airliners," N.L. Nagda, M.D. Koontz, A.G. Konheim, and S.K. Hammond, *Atmospheric Environment* 26A(12): 2203-2210, 1992**

"Between April and June 1989, 92 randomly selected flights were monitored to determine prevailing levels of environmental tobacco smoke (ETS) and other pollutants in the airliner cabin environment. The monitored flights included 69 smoking flights, 8 of which were international, and 23 nonsmoking flights, all of which were domestic. Selected ETS contaminants (nicotine, respirable suspended particles and carbon monoxide), as well as ozone, microbial aerosols, carbon dioxide and other environmental variables were measured in different parts of airliner cabins."

"This paper reports on methods used for and results of air quality measurements conducted in the study; evaluation of health risks due to ETS, other pollutants and cosmic radiation as well as assessment of mitigation strategies are included in a DOT report."

"Levels of ETS contaminants monitored during the study were substantially higher in smoking sections of the aircraft than in nonsmoking areas, and these levels were strongly correlated with observed smoking rates. There was some evidence of ETS migration to the no-smoking boundary region near the smoking section, particularly for RSP concentrations in this region that were related to smoking rates and distance from the smoking section. Monitored CO_2 levels were sufficiently high and monitored humidity levels were sufficiently low to pose potential comfort problems for aircraft occupants. Ozone levels on all monitored flights were well within existing standards for airliner environments, and monitored levels of microbial aerosols were below those in residential environments that have been characterized through cross-sectional studies."

[41] **"Effects of Ventilation on Smoking Lounge Air Quality," P.R. Nelson, R.B. Hege, J.M. Conner, G.B Oldaker, and H.E. Straub. In: *Measurement of Toxic and Related Air Pollutants*, Proceedings of the 1992 U.S. EPA/A&WMA International Symposium. Pittsburgh, Air & Waste Management Association, 89-94, 1993**

"An experimental smoking lounge (test lounge) was constructed and various ventilation configurations were evaluated. The lounge was evaluated at maximal occupancy (14 smokers) and ventilated at 60 CFM per occupant (ASHRAE Standard 62-1989). Concentrations of CO, CO_2, and RSP were monitored . . . Occupants rated the air quality in the lounge as being acceptable for most of the configurations. Smoking did not contribute significantly to CO_2 concentrations. Smoking had a small effect on CO concentrations; the average increase was less than 1.5 ppm. RSP concentrations ranged from 365 to 642 ug/m^3 and were consistent with smoking activity. . . . Overall, ETS concentrations were lowest when the air within the test lounge was well mixed. Results from the test lounge were compared to those obtained in a smoking lounge in an office building. Concentrations of nicotine and RSP were an order of magnitude lower in the smoking

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lounge in the office building under normal occupancy and use conditions than they were in the test lounge."

"Acceptable air quality, as defined by occupant satisfaction, can be achieved in a smoking lounge using conventional air distribution at ventilation rates suggested by ASHRAE. True displacement ventilation was not achieved . . . Although displacement ventilation can be effective for ETS removal, such systems must be carefully designed to achieve the desired air flow characteristics."

"Investigations conducted in a test room under maximum occupancy conditions may be used to determine relative differences between test configurations and provide an upper limit on the ETS concentrations obtainable. However, ETS component concentrations measured in a test lounge under those conditions may greatly overestimate typical ETS concentrations which would be found in that lounge under typical operating conditions. At high ventilation rates, the removal rate for gas and particulate phase compounds may be affected by air distribution. As a result, two or more indicators may be needed to quantify exposure to gas and particulate phase compounds in ETS."

[42] **"Ventilation and Indoor Air Quality in Finnish Daycare Centers," R. Ruotsalainen, N. Jaakkola, and J.J.K. Jaakkola, *Environment International* 19: 109-119, 1993**

"The purpose of this study was to assess the performance of ventilation and the indoor air quality of Finnish daycare centers and to evaluate the effect of ventilation and building design on indoor air quality. A random sample of 30 daycare centers in the city of Espoo (part of the Helsinki metropolitan area) was selected for the study. The measurements during October and November 1990 consisted of air flows, temperature, relative humidity, concentrations of CO_2, VOC and formaldehyde, and odor intensity. The measurement period was one day."

"The air flows in the 83 children's rooms varied remarkably. The range was 0-11 L/s per person and the average was 3.8 L/s per person. . . . The Finnish guide value of 5 L/s per person was achieved in 30% of the rooms. The exhaust air flows varied from 0 to 4 L/sm^2; only 18% of the children's rooms achieved the Finnish guide value of 2 L/sm^2."

"The CO_2 concentration measured in the 83 children's rooms when occupied varied from 400 to 2500 uL/L (ppm). . . . In the majority of the rooms (96%), the metabolical CO_2 concentration was below the Finnish guide value of 1500 uL/L. In 18% of the rooms, the CO_2 concentration was above 100 uL/L, which is considered as the comfort limit."

"The odor intensity evaluated by two members of a trained panel varied in the 83 children's group rooms when occupied from 0.5 to 8. . . . The main source of the odor was human bioeffluents. In most rooms, the researchers also judged the air stuffy and unacceptable."

"The range of measured formaldehyde concentrations was 0.002-0.038 mg/m^3. The concentrations were well below the Finnish guide value of 0.15 mg/m^3."

"The relative humidity varied from 7 to 66%. The outdoor thermal conditions are the main factor influencing the relative humidity of the indoor air."

"The results indicate that the indoor air quality in the majority of Finnish daycare centers does not satisfy the existing guide values, although there are some daycare centers with good air quality. The ventilation is inadequate in most of the daycare centers. This leads to the accumulation of carbon dioxide, which is an indicator of the accumulation of other indoor air pollutants. The average air flows of the mechanical ventilation in the day-care centers varied from nonexistent to above design values."

"The percentage of nursing workers perceiving unpleasant odors in the 30 daycare centers studied varied from 20% to 100%."

"Mold odor was reported by 6% of the nursing workers: in two daycare centers over half of the workers and in three centers one worker experienced mold odor. These daycare centers had also suffered water damage. Water damage and moisture problems appeared in 70% of the daycare centers."

"[P]erceptions of poor indoor air quality are quite common. The frequency of mold odor and moisture problems indicated microbiological growth, which may have respiratory health effects. Thus there are both good and bad daycare centers in all types of buildings. We consider that the study addresses an important public health issue and we intend through further analysis to estimate the effect of poor indoor air quality on the health and comfort of workers and children in daycare centers."

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